

What is claimed is:

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1. A shelf stacking machine for storing and retrieving paper reels, particularly in the printing industry, which is movable in an aisle between storage positions on both sides that hold paper reels stored above one another and in the longitudinal direction of the aisle, and has a receptacle for a paper reel,

characterized in that the receptacle (1) is formed by a fork (1) that is vertically pivotable around a horizontal axis (6) and incorporates measuring devices (7) that detect the carrying load of the picked-up paper reel (P), which transmit the detected measuring data via a control means to an actuator (8) that is coupled to the fork (1) movement-wise, which vertically pivots the fork (1) into the horizontal position in accordance with the measuring data and holds it in this horizontal position during transport of the paper reel.

2. A shelf stacking machine according to claim 1, characterized in that two ultrasound sensors are disposed as measuring instruments (7) in one or in each of the two fork members (1a) of the fork (1).

3. A shelf stacking machine according to claim 1 or 2, characterized in that the fork (1) is provided with prism shaped or circular-arc shaped receptacle sections (a, b, c) for various diameters of the paper reels (P).

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4. A shelf stacking machine according to any of claims 1 through 3, characterized in that the fork (1) is fixed on a vertical fork frame (9) that is supported with its upper end in a horizontal pivot axis (6) and actuated by the actuator (8) to pivot the fork vertically.
5. A shelf stacking machine according to any of claims 1 through 4, characterized in that the fork (1) is suspended with a rotating ring (10) from a lift and drive unit formed by a lifting gear frame (11) and a drive frame (12).
6. A shelf stacking machine according to any of claims 1 through 5, characterized in that the fork frame (9) is supported with its pivot axis (6) on a fork framework (13), that this fork framework (13) is fixed at its upper end on the rotating ring (10) and the rotating ring (10) is moveable with a moving device (14) on the drive frame (12) for storing and removing reels.
7. A shelf stacking machine according to any of claims 1 through 6, characterized in that the actuator (8), which acts onto the fork frame (9) with a lifting element (8a) that can be moved to and fro, is fixed on the fork framework (13) in the height region of the fork (1).
8. A shelf stacking machine according to any of claims 1 through 7, characterized in that the drive frame (12) is held on the lifting gear frame (11) at both ends and the lifting gear frame (11) is supported vertically adjustable with rollers (11a) on the stand (2) of the shelf stacking machine (RFZ).

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9. A shelf stacking machine according to any of claims 1 through 8, characterized in that the stand (2) of the shelf stacking machine (RFZ) is formed U-shaped and stands with its vertical posts (2a) on motor driven moving devices (3), that the lift and drive units (11, 12) lie between the posts (2a) of the rearranged (2)* and the lifting gear frame (11) is guided with its rollers (11a) vertically adjustable on the posts (2a).

10. A shelf stacking machine according to any of claims 1 through 9, characterized in that the shelf stacking machine stand (2) is or can be coupled to a transport vehicle (TW) that moves the shelf stacking machine (RFZ) out of the operating aisle (G).

11. A shelf stacking machine according to any of claims 1 through 10, characterized in that one horizontal axis pin (14) is disposed in each of the two posts (2a) of the shelf stacking machine stand (2), that both pins (14) are situated coaxially opposite one another and are grasped by the transport vehicle (TW) for the tilting (pivoting of the shelf stacking machine stand from the vertical position into an inclined position).

12. A shelf stacking machine according to any of claims 1 through 11, characterized in that the transport vehicle (TW) is designed portal-like and incorporates vertically adjustable lifting elements (15) with support rollers (16) to raise the shelf stacking machine (RFZ) out of its drive rail (5) in the warehouse floor or pit.

* Translator's note: This translation is based on what appears to be a typographical error in the German-language document.

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13. A shelf stacking machine according to any of claims 1 through 12, characterized in that the lifting elements (15) of the transport vehicle (TW) are vertically adjustable by means of support rollers, either mechanically, electric motor driven, or hydraulically.

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14. A shelf stacking machine according to any of claims 1 through 13, characterized in that a cross connection (17) is disposed between the posts (20) of the stand (2) of the shelf stacking machine (RFZ) with a clearance channel (17a) that is pulled down to the warehouse floor (B) for picking up a paper reel (P) from the floor with the fork (1).

15. A shelf stacking machine according to any of claims 1 through 14, characterized in that the receptacle (1) is formed by a mandrel, preferably a telescoping mandrel.

16. A shelf stacking machine according to any of claims 1 through 15, characterized in that multiple shelf stacking machines (RFZ) that are protected against collision by a safety control means can be moved in the operating aisle (G).

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